

# Exploring the Relationship between Veris EC data and Soil Moisture

- KARA research project –2003
- Dietrich Kastens

# Objective

The objective of this research was to explore the relationship between Veris EC data and moisture for the purpose of developing a standardization procedure.

# Datasets Used

<b>Data Set</b>	<b>Description</b>						
KopNE	Veris EC data collected in April 1998						
HKWayEast	Veris EC data collected in December 2002						
AD_WW	Soil moisture and Veris data collected in July 2003, all sample locations. 157 observations						
AD_SS	Soil moisture and Veris data collected in July 2003, site-specific locations. 30 observations						
WalshS_top	Soil moisture and Veris data collected in July 2003, on a terrace top. 274 observations						
WalshS_channel	Soil moisture and Veris data collected in July 2003, in a terrace channel. 274 observations						
HorRanch	Veris EC data collected in December 2002 and July 200. 2619 observations						

# Shallow EC

Shallow EC	KopNE	HKWayEast	AD_WW	AD_SS	WalshS_top	WalshS_channel
Min	0.90	5.40	26.99	26.99	40.30	22.60
Max	53.70	25.20	73.90	68.21	73.40	84.80
AVG	<b>23.29</b>	<b>12.85</b>	<b>51.23</b>	<b>48.81</b>	<b>57.65</b>	<b>53.75</b>
STD	3.80	3.04	9.60	9.97	6.03	7.70
CV	16.32%	23.70%	18.73%	20.44%	10.46%	14.33%
Month	April	December	July	July	July	July
Year	1998	2002	2003	2003	2003	2003
Est ground Temp	50	40	80	80	80	80
Est ground Moisture	72	8	72	61	36	72

# Deep EC

Deep EC	KopNE	HKWayEast	AD_WW	AD_SS	WalshS_top	WalshS_channel
Min	0.60	7.70	50.96	48.23	4.90	8.50
Max	68.50	31.20	82.44	87.33	84.30	87.80
AVG	<b>30.53</b>	<b>15.48</b>	<b>62.86</b>	<b>62.18</b>	<b>47.30</b>	<b>69.64</b>
STD	3.74	2.37	6.65	7.80	14.56	12.06
CV	12.26%	15.29%	10.57%	12.55%	30.79%	17.32%
Month	April	December	July	July	July	July
Year	1998	2002	2003	2003	2003	2003
Est ground Temp	50	40	80	80	80	80
Est ground Moisture	72	8	72	61	36	72

# Relationship to Soil Moisture

<i>AD_WW 157obs</i>	<i>MOIST_DEPT</i>	<i>SHALLOWEC</i>	<i>DEEPEC</i>
MOIST_DEPT	1		
SHALLOWEC	0.205340628	1	
DEEPEC	-0.11883072	0.071666718	1

# Relative Spatial Comparison

<i>HorRanchEC 2619obs</i>	SEC1202	SEC0703	DEC1202	DEC0703
SEC1202	1			
SEC0703	0.453290254	1		
DEC1202	<b>0.421405821</b>	0.156671507	1	
DEC0703	-0.17561829	<b>-0.115518027</b>	0.15900779	1

# Questions

- Why was there a negative R between Deep EC and soil moisture depth?
- Is a 6' ball probe an accurate tool for assessing soil moisture?
- How much of the variability shown is due to soil temperature instead of soil moisture?